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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/839,729
Filing Date: April 20, 2001
Appellant(s): STRUHSAKER

STRUHSAKER
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 02/01/2007 appealing from the Office action mailed 03/28/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US-6,606,341	Kanterakis	08-2003
US-5,812,951	Ganesan	09-1998
US-5,283,780	Schuchman	02-1994
US-4,932,070	Waters	06-1990

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4, 8-10, 12-14, 18 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Kanterakis (US-6,606,341).

Regarding claim 1, Kanterakis discloses an apparatus (fig. 3, col. 3, lines 34-45) for a communication station operable in a wireless communication system (fig. 1) to

receive at least first burst data signals transmitted thereto upon at least a first channel by a first sending station (col. 2, lines 1-15), said apparatus comprising:

at least a first demodulator (312, 314 and 315) selectably coupled to receive indications of bursts of the first burst data signal (311), said first demodulator for performing demodulation operations upon the indications received thereat (col. 4, lines 6-15); and

a controller (319) coupled to said first demodulator, said controller for controlling performance of the first demodulator (col. 3, line 66-col. 4, line 5) to cause cyclo-stationary filtering of successive bursts of the first burst data signal (col. 4, lines 15-28) during demodulation of the first burst data signal by said first demodulator (fig. 3 and its description).

Regarding claim 2, Kanterakis discloses in figure 3, the apparatus as recited in the rejection of claim 1, wherein the wireless communication system comprises a fixed wireless access system (fig. 1), wherein said communication station comprising a base transceiver station (31), and wherein said first demodulator (312) being embodied at the base transceiver station (fig. 3 and its description).

Regarding claim 4, Kanterakis discloses the apparatus as recited in the rejection of claim 1 wherein the first channel upon which the first burst data transmitted signal being characterized by at least a first channel-related parameter (col. 12, lines 12-43)

and wherein the cyclo-stationary filtering caused by said controller to be performed being performed upon the first channel-related parameter (col. 3, line 66-col. 4, line 5).

Regarding claim 8, Kanterakis discloses an apparatus as recited in the rejection of claim 1, wherein the first burst data signal being characterized by at least a first signal-related parameter (fig. 12 and col. 12, lines 12-52) and wherein the cyclo-stationary filtering caused by said controller to be performed being performed upon the first signal-related parameter (col. 3, line 66-col. 4, line 5).

Regarding claim 9, Kanterakis discloses an apparatus as recited in the rejection of claim 8, wherein the first burst data signal exhibits FEC (forward error correction) (321) and wherein the first signal-related parameter (fig. 12 and col. 12, lines 12-52) upon which the cyclo-stationary filtering being caused to be performed by said controller comprising an FEC-related value (col. 10, lines 40-64).

Regarding claim 10, Kanterakis discloses an apparatus as recited in the rejection of claim 8, wherein the first burst data signal exhibiting modulation orthogonalization (col. 9, lines 25-52) and wherein the first signal-related parameter (fig. 12 and col. 12, lines 12-52) upon which the cyclo-stationary filtering being caused by said controller to be performed comprising a modulation-orthogonalization value (col. 8, lines 45-66).

Regarding claim 12, Kanterakis discloses an apparatus as recited in the rejection of claim 8, wherein the first burst data signal exhibiting time-adjustments (col. 11, line 60-col. 12, line 43) and wherein the first signal-related parameter upon which the cyclo-stationary filtering is caused by said controller to be performed comprises a time-adjustment parameter (col. 12, lines 12-43).

Regarding claim 13, Kanterakis discloses in figure 3, for use in a fixed wireless network (fig. 1) an apparatus (fig. 3 and its description) comprising:

a plurality of subscriber stations (35) (col. 3, lines 19-20); and

a communication station (31) for transmitting and receiving signals to and from said subscriber stations (fig. 5, col. 5, line 63-col. 6, line 18) wherein said communication station further comprising:

at least one demodulator (312, 314 and 315) coupled to the communication station for demodulating a plurality of data signals from a plurality of subscriber stations and received by said communication station (fig. 5, col. 5, line 63-col. 6, line 18); and

a controller (319) for processing incoming data signals and maintaining data signal profiles (318) wherein said controller being coupled to said demodulator for controlling said at least one (col. 3, line 66-col. 4, line 5) demodulator to cause cyclo-stationary filtering of successive bursts of one of the data signals (col. 4, lines 15-28) from one of the plurality of subscriber stations during demodulation of the one data signal by said a least one demodulation (fig. 3 and its description).

Regarding claim 14, Kanterakis discloses in figure 3, the apparatus as recited in the rejection of claim 13, wherein the wireless communication system comprising a fixed wireless access system (fig. 1), wherein said communication station comprising a base transceiver station (31).

Regarding claim 18, Kanterakis discloses in figure 12, the apparatus as recited in the rejection of claim 13, wherein the data signals transmitted to the communication station by said plurality of subscriber stations being transmitted in bursts of selected time durations and wherein said controller further determines times of arrival and directions of the bursts which form the data signals (col. 11, line 60-col. 12, line 52).

Regarding claim 20, Kanterakis discloses in figure 3, a method for acting upon at least first burst data signals transmitted to a communication operable in a wireless communication system (fig. 1), the first burst data signals transmitted to the communication station (31) upon a first channel by a first sending station (35), said method comprising: selectably coupling at least a first demodulator (312, 314 and 315) to receive indications of burst of the first burst data signal (311); controlling performance (col. 3, line 66-col. 4, line 5) of the first demodulator to cause cyclo-stationary filtering of successive burst of the first burst data signal during demodulation of the indications of the first burst data signal (col. 4, lines 15-28).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

I) Claims 3, 11, 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanterakis in view of Ganesan (US-5,812,951).

Regarding claim 3, Kanterakis discloses all the limitations of the apparatus as recited in the rejection of claim 2. But Kanterakis fails to expressly show wherein first demodulator comprising the first demodulator and at least a second demodulator. However in the analogous art, Ganesan teaches in figure 9, wherein first demodulator comprising the first demodulator (160) and at least a second demodulator (162). Since, Kanterakis and Ganesan disclose an apparatus for wireless communication station; therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the system by specifically having first demodulator comprising the first demodulator and at least a second demodulator as taught by Ganesan into the system of Kanterakis for the purpose of providing wireless communication station being capable to communicate at least two mobile stations at the same time.

Regarding claim 11, Kanterakis discloses all the limitations of the apparatus as recited in the rejection of claim 8, wherein the first signal-related parameter (fig. 12 and col. 12; lines 12-52) upon which the cyclo-stationary filtering being caused by said

controller to be performed comprises antenna-combining parameters of the antenna assembly (col. 7, line 40). But Kanterakis does not to particularly recite wherein the communication station including an antenna assembly formed by a first antenna transducer and at least a second antenna transducer to provide antenna diversity. Ganesan teaches in figure 2, wherein the communication station including an antenna assembly formed by a first antenna transducer (29) and at least a second antenna transducer (30) to provide antenna diversity. Since, Kanterakis and Ganesan disclose an apparatus for wireless communication station; therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the system of Kanterakis by specifically having the communication station including an antenna assembly formed by a first antenna transducer and at least a second antenna transducer to provide antenna diversity as taught by Ganesan for the purpose of improving the quality and reliability of wireless communication station.

Regarding claim 15, Kanterakis discloses all the limitations of the apparatus as recited in the rejection of claim 14. Kanterakis does not explicitly disclose wherein the at least one demodulator comprising at least two demodulators, each demodulator embodied in a separate modem at the base transceiver station. However in analogous art, Ganesan teaches in figure 9, wherein the at least one demodulator comprising at least two demodulators (160 and 162).

Kanterakis and Ganesan fail to expressly recite each demodulator embodied in a separate modem at the base transceiver station. However, it is well known the art to

place each demodulator in a separate modem at the base transceiver station in order to make easier for system installation and part replacement.

Regarding claim 19, Kanterakis discloses in figure 3, the apparatus as recited in the rejection of claim 13. Kanterakis does not particularly show wherein said controller further comprising a memory for storing and maintaining said data signal profiles and said channel profiles associated with each of the received said data signals. Ganesan teaches in figure 9, wherein controller (174) further comprising a memory (175) for storing and maintaining said data signal profiles and said channel profiles associated with each of the received said data signals (col. 15, lines 16-32), in order to separate profiles being created, stored and updated at the base station.

II) Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanterakis in view of Schuchman (US-5,283,780).

Regarding claim 5, Kanterakis discloses the apparatus as recited in the rejection of claim 4. But Kanterakis fails to expressly show wherein the first channel-related parameter upon which the cyclo-stationary filtering being caused to be performed by said controller comprises a fading-related parameter. However in the analogous art, Schuchman teaches wherein the first channel-related parameter upon which the cyclo-stationary filtering (col. 9, lines 9-67) being caused to be performed by controller (33) comprises a fading-related parameter (col. 10, line 58-col 11, line 15). Since, both Kanterakis and Schuchman are related to wireless communication transceiver;

therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system by specifically having wherein the first channel-related parameter upon which the cyclo-stationary filtering being caused to be performed by said controller comprises a fading-related parameter as taught by Schuchman into the system of Kanterakis for the purpose of improving the quality and reliability of wireless communication transceiver.

Regarding claim 6, Kanterakis and Schuchman disclose the apparatus as recited in the rejection of claim 5. Schuchman further discloses in figure 5, wherein the first demodulator (31) comprises a first equalizer (21) and wherein the fading-related parameter (col. 8, lines 41-67) upon which the cyclo-stationary filtering being caused to be performed by controller (33) comprises a first-equalizer weighting value (fig. 7 and col. 10, lines 1-38).

Regarding claim 7, Kanterakis and Schuchman disclose the apparatus as recited in the rejection of claim 6. Schuchman further discloses in figure 5, wherein said controller further comprises a memory (col. 10, line 37) for storing and maintaining values of the first channel-related parameter.

c) Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanterakis and Ganesan and further in view of Waters (US-4,932,070).

Regarding claim 16, Kanterakis and Ganesan disclose all the limitations of the apparatus as recited in the rejection of claim 15. Kanterakis and Ganesan do not particularly teach wherein said base transceiver station being capable of operating two subscriber air interfaces on a burst-by-burst basis wherein each said burst comprising different data signal profiles and channel profiles. However in analogous art, Waters teaches in figure 3, wherein said base transceiver station (10) being capable of operating two subscriber air interfaces on a burst-by-burst basis wherein each said burst comprises different data signal profiles and channel profiles (col. 7, line 55-col. 8, line 42). Since, Kanterakis, Ganesan and Waters disclose an apparatus for wireless communication station; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Kanterakis and Ganesan by specifically having a base transceiver station being capable of operating two subscriber air interfaces on a burst-by-burst basis wherein each said burst comprises different data signal profiles and channel profiles as taught by Waters for the purpose of offering and enhancing wireless communication station of capability to communicate at least two mobile stations at the same time.

Regarding claim 17, Kanterakis, Ganesan and Waters disclose all the limitations of the apparatus as recited in the rejection of claim 16. Waters further discloses wherein said first and second demodulator of said at least two demodulators alternately receive incoming data signals communicated by alternating ones of said subscriber stations (col.7, lines 36-41).

(10) Response to Argument

Appellant's arguments have been fully considered and are deemed not persuasive for following reasons.

a) In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., As used in the specification, cyclo-stationary filtering refers to relying on the assumption that channel characteristics are relatively stationary across successive data bursts from a particular subscriber (i.e., change slowly relative to data burst rates) to apply equalizer weights computed for the data burst from a subscriber in one data frame to filtering of a data burst from the same subscriber within the next successive data frame, with the equalizer weights computed for the first data burst being employed to update the profile for the respective subscriber station and then used to filter a subsequent data burst from that subscriber station) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Appellant argued the independent claims each "recite cyclo-stationary filtering of successive bursts of a received data signal... Such a feature is not found in the cited reference". The examiner respectfully disagrees with the appellant's argument. Figure 3 of Kanterakis shows a base station receiver comprising a demodulator (312) for demodulating the burst data signal, which is transmitted from a remote station (also see

fig. 12 and col. 12). The figure 3 also shows a controller (319) coupled to the demodulator for controlling the demodulation process. Kanterakis evidently describes the received signal as "the access-burst signal may include the plurality of RS-preamble signals, RS-power-control signals, and RS-pilot signals, and the data are considered concatenated to the access-burst signal" (see col. 12). Katerakis further discloses that "The programmable-matched filter 315 despreads the received spread-spectrum signal. A correlator, as an alternative, may be used as an equivalent means for despreading the received spread-spectrum signal. The preamble processor 316 detects the preamble portion of the received spread-spectrum signal. The pilot processor detects and synchronizes to the pilot portion of the received spread-spectrum signal. The data and control processor detects and processes the data portion of the received spread-spectrum signal" (see col. 4). Figure 3 shows that the controller 319 controls the actions of components with control lines from the controller 319 to various parts such as filter 315, preamble processor 316, pilot processor 317, data and control processor 318, according to the burst type thereby cyclically changing the operation of the receiver. Thus, Kanterakis teaches filtering of successive bursts according to the burst type and demodulating the bursts accordingly; therefore, disclosing cyclo-stationary filtering of successive bursts.

b) Appellant argued that "Claim 4 recites that the first channel upon which the first burst data signal is transmitted is characterized by at least a first channel-related parameter, and the cyclo-stationary filtering is performed upon the first channel-related

parameter. Such a feature is not found in the cited reference". The examiner respectfully disagrees with the appellant's argument. Kanterakis discloses a common channel for transmitting a burst signal, and/or more specifically describes the burst signal is "transmitted in time, at increasing power levels. The power from RS-preamble signal to RS-preamble signal increases according to the power values P0, P1, P2. . . . The power values increase according to their index, that is, P0<P1<P2" and the figure 3 clearly shows the controller controlling the filter for filtering the burst signal. Since, RS-preamble signal is a part of the burst signal, therefore, one of ordinary skill in the art can interpreted that time and/or power level is a channel-related parameter. Thus, Kanterakis discloses the claimed limitation of "the first burst data signal is transmitted is characterized by at least a first channel-related parameter, and the cyclo-stationary filtering is performed upon the first channel-related parameter".

c) Appellant argued that "Claim 8 recites that the first burst data signal is transmitted is characterized by at least a first signal-related parameter, and the cyclo-stationary filtering is performed upon the first signal-related parameter. Such a feature is not found in the cited reference". The examiner respectfully disagrees with the appellant's argument. Kanterakis discloses that the burst signal is "transmitted in time, at increasing power levels. The power from RS-preamble signal to RS-preamble signal increases according to the power values P0, P1, P2. . . . The power values increase according to their index, that is, P0<P1<P2" and the figure 3 clearly shows the controller controlling the filter for filtering the burst signal. Since, RS-preamble signal is a part of

the burst signal, therefore, one of ordinary skill in the art can interpreted that time and/or power level is a signal-related parameter. Thus, Kanterakis discloses the claimed limitation of "the first burst data signal is transmitted is characterized by at least a first signal-related parameter, and the cyclo-stationary filtering is performed upon the first signal-related parameter".

d) Appellant argued that "Claim 9 recites that the first burst data signal exhibits FEC (forward error correction) and that the cyclo-stationary filtering is performed upon an FEC-related value. Such a feature is not found in the cited reference". The examiner respectfully disagrees with the appellant's argument. Kanterakis discloses the controller having control links coupled to the filter, preamble processor, the FEC (forward error correction) decoder and FEC (forward error correction) encoder (see fig. 3 and col. 3). Kanterakis discloses that the burst signal is "transmitted in time, at increasing power levels. The power from RS-preamble signal to RS-preamble signal increases according to the power values P0, P1, P2. . . . The power values increase according to their index, that is, P0<P1<P2" and the figure 3 clearly shows the controller controlling the filter for filtering the burst signal. Since, RS-preamble signal is a part of the burst signal and preamble processor (which coupled to FEC decoder and encoder) processes the RS-preamble signal; therefore, one of ordinary skill in the art can interpreted that time and/or power level is a FEC-related value. Thus, Kanterakis discloses the claimed limitation of "the first burst data signal exhibits FEC (forward error correction) and that the cyclo-stationary filtering is performed upon an FEC-related value".

e) Appellant argued that "Claim 18 recites that the controller determines times of arrival and directions of the bursts which form the data signals. Such a feature is not found in the cited reference". The examiner respectfully disagrees with the appellant's argument. Kanterakis discloses the remote station transmitting the burst signal, which is divided the frame time duration into a number of time slots and the burst signal is transmitted at the beginning of the time slot (see col. 12). Kanterakis specifically describes "The base station is able to recognize this preamble, and is expecting its reception at the beginning of each access slot. The length of the access burst is variable and the length of the access burst is allowed to vary from a few access slots to many frame durations" (see fig. 5 and col.7). Since, RS-preamble signal is a part of the burst data signal and the base station is controlled by the controller (fig. 3, 319); therefore, Kanterakis discloses the claimed limitation of "the controller determines times of arrival and directions of the bursts which form the data signals".

f) In response to the appellant's argument, with regard to the rejection of claims 3, 11, 15 and 19 under 35 USC § 103(a) over Kanterakis in view of Ganesan, it is believed that Kanterakis and Ganesan disclose all the limitations of the claims (see section above). Thus, the combination of Kanterakis and Ganesan can be used to establish prima facie obviousness for claims 3, 11, 15 and 19 because the references teach or suggest all claim limitations as required. See MPEP § 2143.03. Therefore, prima facie obviousness under 35 U.S.C. § 103 has been established.

g) Appellant argued, regarding claim 11, that "The cited portion of Ganesan et al teaches a transmit antenna 29 and a receive antenna 30, not first and second antenna transducers providing antenna diversity". The examiner respectfully disagrees with the appellant's argument. Figure 2 of Ganesan clearly shows two antennas 19 and 30 connected to the receive section 21. Ganesan describes evidently that these two antennas are receive antennas (see col. 8). Consequently, Ganesan discloses claimed limitation of "first and second antenna transducers providing antenna diversity".

h) Appellant argued, regarding claim 19, that "The cited portion Ganesan et al teaches a memory block 175 for extra program storage capability, but does not suggest storing data signal profiles and/or channel profiles in that memory block 175". The examiner respectfully disagrees with the appellant's argument. Ganesan teaches particularly that the data signal is stored in the memory before the data signal is transferred to the channel encoder (col. 8) and also suggests that "The channel encoder 44 encodes the digital signal with synchronization information in accordance with instructions stored in a programmable read only memory (PROM) 46 integrated circuit. The program stored in the PROM 46 is the decoding and encoding algorithm disclosed in the Bellcore specification which anyone of ordinary skill in the art may program in to a PROM or other memory device" (see cols. 8 and 15). Consequently, Ganesan discloses the claimed limitation of "a memory for storing data signal profiles and/or channel profiles".

i) In response to applicant's arguments that the combination of Kanterakis and Schuchman do not disclose all the limitations in claims 5-7, the examiner notes that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this particular case, Kanterakis was used to teach all the limitations, which process the burst data signal, except the limitations of "performing the cyclo-stationary filtering upon a fading-related parameter" and "performing the cyclo-stationary filtering upon an equalizer weighting value". Further, Schuchman was used only to teach the limitations of "performing the cyclo-stationary filtering upon a fading-related parameter" and "performing the cyclo-stationary filtering upon an equalizer weighting value" (cols. 8-10). Therefore, the examiner asserted that it would be obvious to one of ordinary skill in the art to apply Schuchman's teaching in Kanterakis's method in order to improve the quality and reliability of wireless communication transceiver.

With all the reasons stated above, the rejection is deemed proper and still stands.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

(12) Conclusion

For the above reasons, it is believed that the rejection is proper, and the Board of Patent Appeals and Interferences is therefore respectfully urged to sustain the Examiner's rejection.

Respectfully submitted,

Huy Phan

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